Before The
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

In the Matter of	)	
	)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band	)	ET Docket No. 02-380

REPLY COMMENTS OF REC NETWORKS

REC Networks ("REC") is a supporter of locally owned and diverse radio. REC currently operates several Internet only radio stations. REC also operates several websites including the original LPFM Channel Search Tool. REC Networks also represents the interests of independently owned Low Power FM ("LPFM") broadcast stations and their listeners.

REC has reviewed the comments already submitted in this proceeding. Participants in this proceeding fall in several categories:

Wireless networking interests - We have heard from manufacturers and potential users who have expressed the need for additional spectrum for wireless networking (Wi-Fi) devices.

Wireless Internet Service Providers - Companies that currently offer internet access to urban and rural customers using the existing wireless spectrum.

National broadcast interests - National and statewide organizations that represent the overall interests of the broadcast interests.

Television station owners - Group owners of broadcast stations speaking independent of the national and statewide associations.

Public Safety - Current license holders in spectrum shared between the broadcasting service in public safety interests as well as stakeholders in the 700 MHz band.

Other interests represented included the radio astronomy community, the wireless medical telemetry industry and concerned citizens.

THE INTRODUCTION OF NEW WIRELESS DEVICES MUST WAIT UNTIL THE CONCLUSION OF THE DTV TRANSITION

Even though in comments from the National Association of Broadcasters and others, that the broadcast industry does not want to see any new devices introduced in the broadcast bands, individual group owners such as Cox and Sinclair take a more reasonable approach that unlicensed devices can co-exist in the television spectrum[1]. NAB and the individual TV station owners along with REC agrees that any introduction of new devices to the television broadcast spectrum can not be done until the conclusion of the DTV transition[2]. As the State Broadcasters points out, there remains many NTSC TV broadcasters with DTV allotments outside the core who will need to find a channel inside the core to transition to. We also point out that because of the requirements to protect the incumbent NCE-FM broadcast stations, that channel-6 is an undesirable channel to transition a station to. Although we have a desire to clear channel 6 for an expansion of the FM band, there is a possibility that the channel-6 stations that have DTV allotments outside the core will most likely transition back to channel-6 as NCE-FM restrictions are already in place. REC agrees with Cox and Sinclair that no new wireless devices should be introduced into the spectrum until after the DTV transition.

WIRELESS DEVICES IN TV SPECTRUM MUST BE FIXED IN NATURE

Respondents to the NOI from both the broadcast industry and especially from the public safety industry have expressed major concerns about the introduction of *portable* devices[3] in the TV spectrum and that devices would not be able to properly protect

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[1] - See *Cox Broadcasting* at 1.

[2] - See *Cox Broadcasting* at 4.

[3] - Although the term *"portable device"* will be considered by many who are following this proceeding as a wireless networking device (such as one installed in a laptop computer), it can mean any kind of an unlicensed portable device such as a baby monitor, garage door opener, very-low power broadcast device or other entertainment device.

licensed users[4], especially land mobile/public safety users as transmissions are sporadic where broadcast signals are continuous[5]. Some have expressed concerns about the use of GPS equipment and how it may not work in certain locations where a satellite signal can not be obtained. In our original comments, we have also expressed concerns about storing Table of Allotments data in a wireless device.

The wireless medical telemetry[6] interests have expressed concerns about the transitory nature of wireless devices and their impact on wireless medical telemetry devices. Especially, if the proposed wireless devices are introduced in or near a health care environment that uses wireless medical telemetry[7].

On the other side, we have heard from the Wireless ISP (WISP) industry, that feel there is a need for additional spectrum to provide the "last-mile" to their customers[8].

REC feels that we can strike a balance between these users. One thing that the existing users of the TV broadcast spectrum have in common is that their operations are pretty much fixed in nature. Broadcast stations operate from a single fixed location and it received throughout its service area, public safety operations, although mobile in nature are concentrated and therefore protected to specific urban areas on specific frequency bands (TV channels). Wireless medical telemetry, although some devices may actually be portable, their portability is confined to a fixed facility[9].

REC feels that like with the other users of the band, wireless broadband devices that are proposed for the TV broadcast bands must remain *fixed* in nature. REC feels that devices that are proposed for these bands should be limited to devices professionally installed by

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[4] - See *APCO* at 3.

[5] - See *Los Angeles County* at 5.

[6] - See §15.242.

[7] - See *Philips Medical Systems* at 2.

[8] - See *Redline Communications* at 5 and *Mother Lode Internet* at 1.

[9] - §15.242(a)(2) specifically prohibits wireless medical telemetry devices operating in the 174-216MHz and 470-668 MHz bands from being operated from ambulances.

a wireless ISP, who could consult database services, such as the one provided by REC to determine the most desirable channel to operate on based on parameters codified in the Commission's rules. REC will not introduce these parameters at this time. REC feels that these rules should provide full protection to TV broadcast stations (including Class A, LPTV, translators and boosters), urban areas where 470-512 MHz public safety systems operate, use of the 470-512 MHz spectrum in the Gulf Coast region and to health care facilities where wireless medical telemetry devices[10] operate on their co-channel as well as provide a limited amount of protection to the first adjacent channels of these operations.

REC is also concerned that if portable and transient devices are permitted in this band, they may be taken into other countries where such operation would be prohibited. We point out that existing devices operate on frequencies that are considered in many nations to be Industrial Scientific and Medical (ISM) and accepted to allow wireless network devices that are currently being marketed.

Once exception for "portable" devices should exist for operations in the 76-88 MHz band (TV channels 5 & 6). REC feels that portable wireless devices such as low power broadcast devices (including wireless computer speaker extenders) should be permitted to operate in this band using the same parameters as those afforded to intentional radiators operating in the 88-108 MHz band under §15.239 with an additional parameter that operations within totally enclosed locations can operate at higher powers as long as field strengths outside the facility do not exceed what is required by §15.239 and that TV and adjacent FM stations are fully protected.

[10] - We note that even though there is frequency coordination required for WMTS users under Part 95, there is no frequency coordination required for wireless biomedical telemetry devices operating under Part 15. Therefore, any database provider's ability to properly protect hospitals operating with the older Part 15 devices may not be possible.

REVIEW OF THE SPECTRUM

Channels 2-4 (54-72 MHz)

We have heard from Motorola and other manufacturers of set top boxes and entertainment devices who have expressed a concern that intentional radiators in the 54-72 MHz band will cause harmful interference to their devices. REC agrees with the manufacturers that new devices will cause harmful interference to set-top boxes that radiate in this band. REC also feels because of the propagation characteristics of the lower VHF band, that this band may be unstable and undesirable for even fixed wireless devices. We do not feel that any new wireless devices should be introduced into this band.

Channels 5-6 (76-88 MHz)

No one other than REC had filed comments that specifically addressed this band. If the Commission does not permit wireless networking devices to operate on the 54-72 MHz band, it would also be logical to also not permit wireless networking devices in this band. Since these devices will have to be frequency agile, we do not feel that it would be in the manufacturer's best interest to build a device that only covers 2 channels in a particular band, especially in some areas, both Channels 5 and 6 will not be available.

We also need to address issues in other proceedings raised by National Public Radio as well as issues raised in this proceeding as well as other proceedings by REC that there is a desire by both the full power and low power FM broadcast interests to remove DTV Channel 6 from the core and open the band for LPFM, translator and lower power Class A NCE FM operation. In order to accomplish this in the future, this spectrum should be treated like the FM broadcast band when it comes to Part 15 requirements.

In previous proceedings, organizations such as the National Hockey League have expressed interest in providing low power broadcasting in enclosed facilities such as sports arenas. REC desires low power broadcasting in facilities such as convention centers and meeting halls. We feel this can be achieved by allowing Channel-6 spectrum (especially the spot frequencies of 87.5, 87.7 and 87.9 MHz) to be used for field strengths

higher than what is allowed under §15.239 for all points *within* a particular facility but must operate at a power where the building structure would attenuate most of the signal. This while protecting incumbent TV stations and nearby NCE-FM stations (as well as any licensed future users of the 82-88 MHz spectrum for licensed broadcasting).

We also pointed out in our original comments that consumer devices that can tune an FM broadcast signal on the 76-88 MHz band are already mass-produced but there are currently not marketed since 76-88 MHz is currently used in this country[11] for FM broadcasting.

Channels 7-13 (174-216 MHz)

For rural fixed-wireless networking devices, this may be the best band given the propagation characteristics of the band. We do need to make sure that if unlicensed wireless network devices are used in this band, that they must protect the broadcast and biomedical telemetry devices as well as wireless microphones and other broadcast auxilliary devices permitted under Part 74. It would help if there was a reporting/coordination mechanism for the biomedical devices operating in this spectrum. REC will support this spectrum for use by fixed wireless networking devices at the conclusion of the DTV transition.

Channels 14-20 (470-512 MHz)

Comments from several public safety agencies, equipment manufacturers and organizations that represent land mobile and public safety interests have expressed concerns that wireless devices used in major urban areas in this spectrum can cause harmful interference to the public safety and private land mobile radio services. As we have addressed in our original comments, REC is also concerned about the use of any *transient* (or mobile) devices in this band. REC has taken a position against transient, portable or mobile wireless devices in the TV spectrum.

[11] - This band is used for FM sound broadcasting in Japan.

If a fixed wireless device installed by a professional wireless ISP (WISP) and located outside of the major metropolitan areas should be able to use this spectrum as long as there is no interference to the TV and DTV services. Remember, one of the primary purposes of wireless ISPs is to provide broadband solutions to customers who are not currently served by local loops qualified to provide digital subscriber line (DSL) services and are not served by a cable company.

REC feels that this spectrum can be used in areas well distanced from the urbanized areas where public safety and land mobile operations take place. Even if the Commission goes against REC's wishes regarding a prohibition of portable and transient operations in these bands, we ask that portable and transient operations in this band be strictly prohibited in all locations. If that is not possible, then we will have to agree with the Public Safety interests that the 470-512 band be declared "off limits" to broadband networking devices.

Channels 21-36 (512-608 MHz) and 38-51 (614-698 MHz)

Although no group has specifically targeted these channels, REC feels that as long as operations are limited to fixed wireless networking devices that are properly spaced from incumbent broadcasters, these bands would be desirable for such devices.

Channel 37 (608-614 MHz)

Comments received on this issue were mainly from the medical telemetry[12] industry and from the radio astronomy interests[13]. The medical telemetry interests expressed concern about wireless devices, especially those that are portable in nature can cause interference to WMTS devices when the wireless device is used in the health care environment. REC feels that the nature of WMTS is fixed in nature for the most part and that operations can be easily coordinated with radio astronomy users. Unlicensed wireless devices proposed in this petition would not be coordinated with health care providers using WMTS equipment.

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[12] - *Initial Comments of Phillips Medical Systems* at 2.

[13] - See Comments from the National Academy of Sciences' Commission on Radio Frequencies.

For these reasons, we support the position of the medical telemetry industry as well as the radio astronomy interests that the introduction of additional wireless devices in Channel 37 spectrum would not be in the public interest. If we allow fixed wireless networking devices on other TV channels in the UHF spectrum, we see no reason to justify allowing fixed wireless devices to be allowed to operate on Channel 37 spectrum. By putting this prohibition in place, we continue to protect the WMTS and radio astronomy.

Channels 52-69 (698-802 MHz)

REC feels that because this spectrum will be auctioned to commercial wireless interests and portions allocated for public safety, we see absolutely no reason why this spectrum should be within the scope of this proceeding since the band will no longer be in the "core" TV spectrum. REC feels that due to the potential interference to future generation wireless systems as well as for the protection for safety of life, that this spectrum be completely removed from the scope of this proceeding.

CONCLUSION

REC feels that we can meet the needs for the wireless networking industry to expand their "last mile" services to more rural areas who are excluded from broadband services due to the telecommunications industry lack of desire to invest into rural areas or who can't serve certain customer groups due to technical issues such as excessive insertion loss. REC feels that high-band VHF and UHF frequencies can be used for this purpose.

At the same time, we need to look at making sure that interests other than wireless networking is met. REC feels that this can be achieved by permitting lower power intentional radiators in the 76-88 MHz band.

As we do this, we must also protect the incumbent users on the band, especially when it comes to life critical functions such as public safety land mobile and WMTS. For this reason, we feel that 608-614 MHz should be "off limits" for any new wireless device and that any operations on 470-512 MHz should be restricted to rural areas well separated from the urbanized areas where this spectrum is used for public safety land mobile.

We must also make sure that existing consumer devices are protected from new wireless networking devices. Therefore, we propose that 54-72 MHz remain off-limits.

Most importantly, with the exception of very low power devices operating in 76-88 MHz, we must make these new operations limited to fixed stations that are professionally installed by a Wireless ISP.

Respectfully submitted,
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APPENDIX A
SUMMARY OF THE REC POSITION ON THE USE
OF CERTAIN WIRELESS DEVICES ON TV BROADCAST BANDS

TV Ch.	Frequency Band	Non-TV Broadcast user	REC position
2-4	54-72	Consumer electronics, VCRs, cable and satellite set-top boxes.	**Do not allow new wireless devices**.
5-6	76-88	(FM broadcast band in Japan)	**Allow very low power wireless devices**. Devices should have field strengths limited to those allowed in §15.239 to devices operating in 88-108 MHz. For devices operating within enclosed public structures, field strengths should be measured from outside the building. Channel 5 and 6 TV stations need to be protected.
7-13	174-216	Biomedical telemetry, wireless microphones	**Allow wireless networking devices** in this band protecting licensed users.
14-20	470-512	Public safety land mobile users in certain urban areas, offshore services in the Gulf of Mexico.	**Allow wireless networking devices <u>ONLY</u>** if their operations are fixed, professionally installed and well distanced from any land mobile operations.
21-36	512-608		**Allow wireless networking devices.**
37	608-614	Radio astronomy, WMTS, TV operations prohibited.	**No new wireless devices.**
38-51	614-698		**Allow wireless networking devices.**
52-69	698-802	Lower 700 MHz band, Upper 700 MHz band.	**No new wireless devices.**

OVERALL, IT IS REC'S DESIRE THAT ALL UNLICENSED OPERATIONS IN THE TV SPECTRUM (except for very low power usage of 76-88 MHz) BE PERMANENT AND FIXED IN NATURE.

APPENDIX B
HOW THE TV SPECTRUM IS USED IN OTHER ADMINISTRATIONS

TV Ch.	MHz	**United States**	**United Kingdom**	**Japan**	**Australia**
2-4	54-72	TV Broadcasting	Land Mobile Amateur Radio	Fixed-Mobile Radio Control Devices	Fixed-Mobile Broadcasting
5-6	76-88	TV Broadcasting	Land Mobile	FM Broadcasting	Fixed-Mobile
7-13	174-216	TV Broadcasting	Land Mobile Government Remote Meter Reading	TV Broadcasting	TV Broadcasting
14-20	470-512	TV Broadcasting Land Mobile	TV Broadcasting Land Mobile	TV Broadcasting Land Mobile	Fixed-Mobile
21-36	512-608	TV Broadcasting	TV Broadcasting Aero Navigation	TV Broadcasting	Fixed-Mobile TV Broadcasting
37	608-614	Radio Astronomy	Radio Astronomy	TV Broadcasting	TV Broadcasting
38-51	614-698	TV Broadcasting	TV Broadcasting Land Mobile	TV Broadcasting	TV Broadcasting
52-69	698-802	TV Broadcasting Land Mobile	TV Broadcasting Land Mobile	Fixed-Mobile	TV Broadcasting

This chart shows how frequencies are used in different parts of the world for different purposes and these may not be compatible with broadband wireless devices. REC feels that transitory devices could be easily imported into other countries and possession of these devices could lead the user to criminal penalties.